
China's Response to Climate Change: A Policy Analysis *

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Abstract: *China is greatly influenced by climate change and sensitive to problems arising from climate due to high population, increased economic development, wide climate range and vulnerable environment. In response to the adverse effects of climate, China has introduced new policies based on sustainable development, which seeks to find balance between economic development and environment protection towards the ultimate goal of national security. This analysis addresses China's guiding principle and policy response against climate change.*

Key words: China, Climate Change, National Security, Environment Policy

1. Introduction

In recent years, China has been under frequent attacks by nature. Due to high population, low economic development, wide climate range and vulnerable environment, China is easily influenced by climate change and deeply sensible to problems arising from climate. China has become a key player in international climate institutions because (1) China has surpassed the US as the leading producer of CO₂ and the amount of production is growing steadily; (2) China's status and influence in the G77 endow it with an advantageous position in climate change negotiations. As the world's largest developing country with significant influence in the United Nations, China is expected to have a greater leadership role among developing countries (Heggelund, 2007: 156).

According to a report by the International Energy Agency (IEA), if effective measures are not taken, China's production

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from 2004 to 2030 would be twice the sum of OECD states (Bustelo, 2007). Despite China's reluctance to compromise, criticisms demand the country to undertake more actions. China's elites have promised that climate change would not hinder state development and higher level promises such as stable increase in the use of renewable energy and continued control over population, have been made to deal with the problem. China's white paper entitled "China's policies and actions on climate change" published in 2007, proclaims to reduce the use of energy and increase the use of renewable energy (Bustelo, 2007).

China's elites take notice of climate change because the phenomenon would affect state capability for development (Marks, 2010: 972). Scientists have made predictions that China will face major impacts brought on by climate change (Zeng et. al., 2008: 730-731), including: the melting of glaciers, particularly in Tibet; estimated decline in agricultural production, as much as 10% of production by 2030 (Bustelo, 2007); natural disasters caused by more famine, storm, flood and severe weather; rising sea level, influencing as many as 67 million people (Heggelund, 2007: 167); exposure of an additional 40% of the population under natural threats.¹

The main goals of China are economic development, poverty reduction and social stability (Hallding et. al., 2009: 120). Climate change is an area of conflict that lies between poverty and sustainable development, an issue closely related to economic development, resource management and energy use. With a population of nearly 1.3 billion people, diminishing natural resources resource, serious environmental pollution and rapid economic growth, China exhibits all the components of a typical development dilemma (Heggelund, 2007: 158). China's economic growth depends on fossil fuels; expanding energy use has become an important part of development and a priority in the process (Heggelund, 2007: 160). China's dilemma is that the country needs energy to improve its economic development and living standard.

¹ "Melting Asia," *The Economist*, 5 June, 2008.

China is particularly vulnerable to climate change, a decisive factor for the formation of policy on climate change. Climate change will have a heavy impact on all aspects of China; the cost of damage is high and threatens China's national interest (Bjorkum, 2005). China needs to take related measures in order to maintain economic growth and reduce the production of greenhouse gases. This paper discusses China's policy response to climate change. The discussion begins with the influences of climate change on China's environment and then moves on to discuss China's guiding principle and policy action in reaction to the issue.

2. The Influence of Climate Change on China's National Security

The issue of climate change has elevated from a non-stream issue to perhaps the biggest and most important threat to national security. Richard Ullman is one of the pioneering scholars calling for the redefinition of national security. In the article "Redefining National Security," Ullman criticizes US definition of national security during the Cold War as "greatly narrowed" and "extremely militarized," which caused US foreign policy to be over militarized and to neglect other damaging threats to national security. Ullman (1983) thinks that serious conflict may be provoked by the population growth in developing countries and the ensuing conflicts of resources and transnational migration.

"The Age of Consequences" report (2007) analyzes the effects of climate on China's national security. The report points out that China's rapid increase in greenhouse gases is caused by its energy structure based mainly on coal, which forms a long term threat to the global environment (Zhang, 2008; Lewis, 2007-08; Campbell et. al., 2007: 61). Production of greenhouse gases would exacerbate existing environmental problems such as desertification, water scarcity and atmosphere pollution. The phenomenon would in turn lead to internal instability and conflict, with migration caused by environmental problems being a source of conflict. This migration is mainly expressed as urban flow from the country, which puts pressure on cities already overloaded in carrying capacity.

On the other hand, regions of China that benefit from some additional rainfall will also need to cope with an influx of migrants from water scarce areas. Han migrants from China's interior have travelled to Xinjiang in search of work and resources, generating competition with local Uyghurs and exacerbated ethnic tensions. Climate change has increased the international pressure on China to become a "responsible member." (Campbell et. al., 2007: 62-63) In sum, climate change may have serious implications for China's environment, coastal region, agricultural industry and water resource, which may lead to an escalation in the level of global conflict (Campbell et. al., 2007: 62-63).

In terms of national security, climate change may bring about three basic challenges: (1) food shortage caused by the decline in agricultural production; (2) decrease in water supply and water quality caused by flood and drought; (3) termination in the supply of strategic mineral resources caused by ice and storm. In sudden events of climate change, restrictions on food, water and energy supply may be first expressed through economic, political and diplomatic means such as treaty and trade embargo. Conflicts over the use of land and water may become more severe and extreme in the process. As states under such influence may become increasingly depressed, the threat of conflict would be further increased (Schwartz and Randall 2003, 14-15). From the perspective of national security, climate change has the following implications for China (Lewis, 2009: 1196-1213):

(1) territory and land quality

Climate change leads to sea level rise and retreat of coastal line, which causes part of the continent to be flooded and greater landmass in the coastal region to be under the potential threat of inundation. In addition, climate change increases the speed of soil degradation. Desertification has minimized the living space of the Chinese people, which implies the threat on continued economic development, ecological security and survival and development of the Chinese ethnicity (Zhang 2009, 21-27; 2010, 61-96).

(2) livelihood

First, climate change affects water resource (Moore 2009, 25-39). China has long suffered from water shortage and unequal distribution; rapid economic development simply exposes the issue of water security. Temperature rise or decrease in rain cause changes to river passage and the amount of flow. At the same time, climate change causes glacier retreat and with great scale retreat, glacial runoff would be reduced, causing the decrease in river runoff as well. This phenomenon not only reduces the supply of water resource, it also causes glacier to lose its adjustment function on water runoff, which generates the negative chain reaction between water resource, bio-system and environment. Climate change further exacerbates China's vulnerability in water resource and the condition of scarcity.

Second, climate change also affects food production. The influences of climate change on China's agriculture are mainly expressed in: (1) increase in production instability; (2) major adjustments to production structure and planning; and (3) great increase in cost and investment. Furthermore, incidents of regional drought caused by high heat and agricultural loss would increase as well.

Third, climate change increases the frequency and strength of extreme weather events, which seriously threaten life, property and living standard of the Chinese people. Climate change increases the speed of the water vapour cycle and transforms the time range and strength of precipitation. As a result, extreme weather events such as increase in the frequency and strength of drought and flood may occur.¹ Flood, drought, snow storm and typhoon cause major losses to life.

(3) autonomy and governing ability

Climate change causes China to confront ever increasing international and domestic pressures. The government's space for autonomous choice is compressed and its

¹ Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (New York: Cambridge University Press).

governing ability further challenged. With climate change becoming a focus of world attention, China faces increasing international pressure. Several reasons contribute to the limitation on China's future development space and potential:

- i. Although China has adopted a series of measures energy conservation and pollution reduction, rapid economic growth and a coal based energy consumption structure have caused China to have a high level of CO₂ production. Great potential for increase has attracted growing international pressure for reduced production.
- ii. With its comprehensive capabilities greatly increased, international recognition of China as a developing state has become more difficult. General agreement by the international community regarding China's self identity as a developing state is hard to come by. Expectations and demands on China are fast increasing.
- iii. Internal separation and division among developing states is increasing. Some island states and non-developed states have commonly demanded global reduction in CO₂ production. This has caused pressures on China. Solidarity among developing states has become harder to maintain.

China has recognized that the modernization path of developed states supported by high energy and resource consumption is no longer applicable. New approaches for modernization that emphasize low carbon development must be adopted.

Aside from policy space, frequent incidence of extreme weather events is also challenging the China's governing ability and political stability. Hit by great snow storm to the south in 2008, China's governing ability and authority was in doubt due to the lack of emergency response in certain regions. Failure to predict the scale of snow caused relief

measures such as early protection, preparation, reinforcement, storage and dispersal to be delayed.

(4) major national defense and strategic projects and military constructions

Climate change causes negative impacts on China's major national defense projects, the Qingzang railway is a typical example. Climate change has had different impacts on strategic projects such as the Three Gorges Dam (san xia gong cheng), South-North Water Transfer, West-East Gas Pipeline, Sino-Russian Oil Pipeline and Green Wall of China (san bei hu fang lin gong cheng). The increase in extreme weather events produces negative influences on China's national defense infrastructure and limits the establishment and advancement of its military capability.

Concrete impacts on China's national defense include: (1) threat on the security of personnel, equipment and facility; (2) hindrance on regular military training; (3) heavier burden on disaster relief by the army; the 2008 national defense whitepaper lists natural disaster as a threat to China's national security for the first time and states that the army should have the ability to carry out diversified missions;¹ (4) impact on weapon efficiency; some ballistic missile bases in China's northwest are located on tundra region; freezing and thawing of tundra affects stable shooting ground; (5) sea-level rise; some islands of strategic value are threatened, which affects planning and infrastructure; (6) increased tensions with neighbouring states; increasing local conflicts and the possibility of military clashes.

3. China's Guiding Principle in Reaction to Climate Change

In terms of climate change strategy, China abides by the following principles: (1) *respond against climate change under*

¹ State Council of the People's Republic of China, "2008 PRC National Defense," http://big5.gov.cn/gate/big5/www.gov.cn/jrzg/2009-01/20/content_1210075.htm

the framework of sustainable development: China will continue to engage climate change issues according to its national strategy on sustainable development; (2) *abide by the “common but differentiated responsibilities” principle as stated in the Climate Change Convention:* developed states should take lead in reducing the production of greenhouse gases and provide financial and technological support for developing states; economic development and poverty reduction are priorities for developing states, and whether developing states meet the goals of the convention depends the realization of basic compromises by developed states; (3) *equal importance placed on reduction and adaptation:* China will continue to strengthen policies in energy conservation and structural improvement, combining the key project of environmental protection and basic infrastructure construction such as disaster prevention and reduction while raising the adaptability to climate change.

(4) *Combine policies in response to climate change and other related policies:* reduction in greenhouse gas production relates to many different fields; climate change policies can be more effective through connections with other related policies; (5) *rely on technological advancement and innovation:* China will effectively exploit technological advances in reducing and adapting to the effects of climate change and provide strong technological support for sustainable development; (6) *active participation and general cooperation:* China will actively participate in discussions under the Climate Change Convention and related activities held by the Intergovernmental Panel on Climate Change (IPCC); China will further strengthen international cooperation in climate change and push forward cooperation in cleaning institution and technology transfer, in joint response with the international community to the challenges of climate change.

4. China's Policy Response to Climate Change

The Chinese government set up special institutions to deal with climate change in 1990 and established the National Coordination Committee on Climate Change (NCCCC) in

1998. In 1994, NCCCC established and passed “China’s Agenda 21 – White Paper on China’s Population, Environment, and Development in the 21st Century,” which sets China’s overall strategic framework for sustainable development in the twenty-first century and main targets in related fields, making an active contribution to the issue of global climate change. The Beijing Outline of the Eleventh Five-Year Program for National Economy and Social Development (2006) confirms the goal and mission of energy conservation and the national plan in response to climate change.

In 2007, China established the National Leading Group to Address Climate Change (Zhu 2010, i). China has adopted substantial measures towards climate change and environmental improvement according to the national strategy for sustainable development. The National Climate Change Programme (*ying dui qi hou bian qian guo jia fang an*) (2007) is China’s first policy document in response to climate change. The paper states in detail China’s response policies towards climate change before 2010, including the mid-term reduction target of one billion tons of greenhouse production (Song 2009).

Also in the same year, China introduced the report on “Scientific and Technological Actions on Climate Change” (2007), corresponding to the National Programme’s emphasis on technological advancement and innovation as important measures to be taken in response to climate change. In order to realize the Guidelines on National Medium- and Long-term Program for Science and Technology Development (2006-2020), China has coordinated scientific research and technological innovation in climate change. The state has raised the overall technological capability in response to climate change and provides technological support for other states.

Regarding the UN climate change conference held in Copenhagen in 2009, China’s position is to realize the Bali Action Plan and introduce clear and concrete arrangements for reduction, adaptation, technology transfer and financial support: (1) confirm that developed states should accept

great emission cut target in the second phase of the Kyoto Protocol and developed states that have yet to ratify the Protocol can accept comparable promises; (2) make effective institutional arrangements that see developed states realize promises to provide financial aid, technological transfer and capability establishment support for developing states; (3) in the condition that developing states receive support, China would adopt appropriate adaptive and reduction actions according to the basic situation of the country and under the framework of sustainable development. China's is determined to conform to the basic framework of the Climate Change Accord and Kyoto Protocol; abide strictly to the Bali Action Plan; abide by the "common but differentiated responsibilities" principle; hold the opinion that equal weight should be put on the principle of sustainable development and reduction, adaptation, technology transfer and financial support.¹

September 2009, PRC leader Hu Jintao presented a speech titled "Join Hands to Address Climate Change" at the UN climate change conference.² Hu points out that states should join hands in facing the common threat of climate change and China has set national plans in response. China will further integrate actions on climate change into its economic and social development plan and take strong measures to reduce carbon emission. Hu also notes that "it is imperative to give full consideration to the development stage and basic needs of developing countries in addressing climate change" and "China still lags behind more than 100 countries in terms of per capita GDP."³ China will adopt a balanced measure between low carbon economy and economic development in the future. It is clear that China expects to seek a balance between controlling greenhouse emission and sustainable development.

¹ National Development and Reform Commission of the People's Republic of China, "Realize the Bali Road Map: China's Position regarding the Copenhagen Climate Change Conference" (*luo shi ba li lu xian tu - zhong guo zheng fu guan yu ge ben ha gen qi hou hui hua hui yi de li chang*), http://www.ndrc.gov.cn/zcfb/zcfbqt/2009qt/t20090521_280387.htm

² Permanent Mission of the People's Republic of China to the UN, "Hu Jintao's Speech at the Opening Plenary Session of the United Nations Summit on Climate Change 'Join Hands to Address Climate Change'," <http://www.china-un.org/eng/hyyfy/t606111.htm>

³ Ibid.

5. Conclusion

An examination of China's policies regarding climate change reveals several points. First, climate change is affected by greenhouse emission, which would inevitably limit China's increase in emission and influence its economic development and national interest (Wiener 2008, 1805-1826). Moreover, climate change would influence agricultural, food, water resource, energy and environmental security. As global temperature rises, increased frequency of extreme natural events such as sea level rise, typhoon, flood and drought would severely damage China's conditions for social economic development and threaten the life and asset security of its people and social stability. China must maintain its national interest and attempt to find a point of balance between economic development and emission reduction. In other words, China seeks to reduce the effects of global warming without paying the cost of economic development.

Second, China has concerns for playing the role of a responsible state with vested interest in the international community. In order to become a responsible power, China must accept international responsibilities, make efforts in reducing carbon emission and greenhouse effect and contribute to the resolution of global climate change. Third, China has concerns for initiating international cooperation and maintaining global interest. Climate change affects the national interest of all states and international cooperation remains the only possible solution. China wants to initiate effective cooperation and create new governance framework and model in response to climate change. In addition, China attempts to make an effort in reconstructing climate change related international organizations and conventions in order to resolve related problems (Tao 2009, 279). Finally, China seeks to improve the effectiveness of climate change institutions through related measures such as improving the quality of law, setting stricter regulations and reinforcing existing norms.

It is clear that a very long road remains ahead for China, as the state has yet to achieve the policy targets set for climate change and related measures remain loose and ineffective. China needs to adopt the following measures in order to achieve better results (Marks 2010, 983-985):

- (1) strengthen the ability of law to supervise environmental law
- (2) increase investment in education for environmental protection
- (3) work with regional officials to encourage clean energy investment
- (4) develop wider covering energy law and stricter penalties and demands
- (5) further strengthen the regulating ability of related departments in charge of environmental protection
- (6) provide regional officials with motivation and inducement for setting climate change policies

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